the scope of the invention in any way be limited by the above description, but instead be determined entirely by reference to the claims that follow.

Flow Analysis of Libraries for Pharmaceutical Chemical Compound Library Analysis

Contemporary pharmaceutical research often involves the discovery of novel ligands which bind to specific cell receptors, thereby producing a pharmacologically beneficial response. The ligands might consist of small peptides or other oligomers of a size and molecular weight that are potentially useful as pharmaceutical products. In the present invention, a large library of compounds may be created and attached to reporter labeled beads. This may be accomplished simultaneously as the compounds are synthesized through an SAP process, directed synthesis or binding pre-synthesized compounds to pre-encoded reporter labeled bead assemblies. In the present invention the entire library can then be exposed to numerous sets of receptor targets in an assay in which the targets are fluorescently labeled, undergo a competitive binding assay, or other assay techniques known to those of skill in the art. The exposure can occur in a controlled fashion in a micro-titer plate well or in a micro-fluidic device. Preferably, numerous copies of the compound library can be pipeted into a micro-titer plate well, along with the multiple copies of a target. After sufficient exposure time, the contents of the well can be withdrawn and analyzed (or analyzed in situ), in accordance with the present invention, to determine which compounds demonstrate binding affinity to the target. The process can be repeated for multiple wells containing different targets. Alternatively, if the targets are labeled with distinct fluorochromes, several targets can be interrogated simultaneously in a single well with the compound library. In this case, one of the channels shown in FIGURE 17 may serve a dual purpose, containing both small reporter imagery superimposed over a larger image of the carrier bead, thereby indicating the presence of a binding signal.

Flow Analysis of Reporter Encoded Cells

In a fashion similar to that disclosed above, the present invention can be used with cells that are exposed to different compounds, viruses, bacteria or environmental conditions. During or preceding exposure, the cells can be labeled with reporters to encode the exposure history, and or the cell type used in an assay. In accordance with the present invention, this process can be conducted in wells of a micro-titer plate, within a micro-fluidic chip, or on a solid support such as a microscope slide. Once the exposure cycle has been complete the cells can be analyzed to characterize relevant biological affects. FIGURE 17 illustrates how these cells would appear when projected onto a detector. In this case elements 346 and 300 represent imagery of the cytoplasm and or nuclei.

Although the present invention has been described in connection with the preferred form of practicing it and modifications thereto, those of ordinary skill in the art will understand that many other modifications can be made thereto. Accordingly, it is not intended that the scope of the present invention in any way be limited by the above description.